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09/736,736	12/14/2000	Robert Arthur Lee	CU-2418 TFP	8027

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EXAMINER
AMARI, ALESSANDRO V

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/736,736	Applicant(s) LEE, ROBERT ARTHUR	
	Examiner Alessandro V. Amari	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover she t with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 October 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoshitake et al. U.S. Patent 5,991,078.

In regard to claim 1, Yoshitake et al. discloses (see Figures 3-5) a diffractive device having a surface relief structure which, when illuminated by a light source, generates one or more diffraction images which are observable from particular ranges of viewing angles around the device as described in column 1, lines 53-68 and column 2, lines 1-57, including: a region of diffractive structural elements, the region having a length and a width as shown in Figures 3 and 5; background diffractive structural elements (B, B') distributed over the length of the region, a plurality of the background elements having a longitudinal extent which extends throughout the width of the region as shown in Figures 3 and 5; and interstitial diffractive structural elements (A, A'); wherein the interstitial elements are interspersed between the background elements

within the region such that the diffractive action of the background elements is to modulated by the interstitial elements, with differing interstitial element configuration in differing parts of the surface relief structure producing differing diffraction effects in corresponding parts of the diffraction images as described in column 6, lines 29-55. It should be noted that the definition of interstitial is "related to or situated in the interstices," an interstice being "a space that intervenes between things," (i.e., situated in a space that intervenes between things). (See Merriam-Webster's Collegiate Dictionary, 10th ed., 1999) Therefore, it is clear that the diffractive structural element (A, A') meets the claimed recitation of an interstitial diffractive structural element.

Regarding claim 2, Yoshitake et al. discloses (see Figures 3, 5) that at least some of the background elements consist of a multiplicity of continuously connected individual ridge or groove segments, with ridge or groove segments in adjacent background elements being arranged in an approximately parallel configuration, and wherein at least some of the interstitial elements consist of individual or bifurcated ridge or groove segments interspersed between the background elements, with interstitial element ridge or groove segments being approximately parallel to ridge or groove segments in adjacent background elements as described in column 4, lines 1-5, column 7, lines 18-58 and as shown in Figure 5.

Regarding claim 3, Yoshitake et al. discloses (see Figures 3 and 5) that at least some of the background elements are approximately parallel, each consisting of a plurality of discontinuous individual ridge or groove segments, and wherein at least some of the interstitial elements are approximately parallel to each other, each

consisting of one or more ridge or groove segments and each being located in a discontinuity in a background element as described column 7, lines 18-58 and as shown in Figures 3 and 5.

Regarding claim 4, Yoshitake et al. discloses that at least some of the interstitial elements are connected smoothly at each end to a background element as shown in Figure 5.

Regarding claim 5, Yoshitake et al. discloses that at least some of the interstitial elements are oriented generally at right-angles to the general orientation of the background elements as shown in Figure 3.

Regarding claim 6, Yoshitake et al. discloses (see Figures 3 and 5) that at least some of the interstitial elements are connected smoothly to adjacent interstitial elements and/or background elements in one or more of the following ways:

(a) a single interstitial element bifurcates smoothly into two interstitial elements;

(b) two interstitial elements join smoothly into a single interstitial element;

(c) an interstitial element joins smoothly into a background element;

(d) an interstitial element of a particular depth and width transitions smoothly into an interstitial element of a different depth and width;

(e) an interstitial element of a particular shape and/or curvature transitions smoothly into an interstitial element of a different shape and/or curvature;

(f) an interstitial element with a particular angular orientation relative to the background elements joins smoothly to an interstitial element having a different angular orientation

as described on column 3, lines 53-68, column 4, lines 1-13, column 7, lines 22-68 and column 8, lines 1-56.

Regarding claim 7, Yoshitake et al. discloses (see Figures 3 and 5) that at least some of the background elements are connected smoothly to adjacent background elements and/or interstitial elements in one or more of the following ways:

(a) a single background element bifurcates smoothly into two background elements;

(b) two background elements join smoothly into a single background element;

(c) a background element joins smoothly into an interstitial element (as shown in Figures 8 and 10);

(d) a background element of a particular depth and width transitions smoothly into a background element of a different depth and width;

(e) a background element of a particular shape and/or curvature transitions smoothly into a background element of a different shape and/or curvature;

(f) a background element with a particular angular orientation relative to other background elements joins smoothly to a background element having a different angular orientation as described on column 3, lines 53-68, column 4, lines 1-13, column 7, lines 22-68 and column 8, lines 1-56 and as shown in Figures 3 and 5.

Regarding claim 8, Yoshitake et al. discloses (see Figures 3-5) that each of the background elements and the interstitial elements has a shape which includes one or more of the following features:

(a) a straight, curved or undulating groove;

(b) a straight, curved or undulating ridge;

(c) an array of dot-shaped indentations or protrusions; or

(d) a polygonally shaped indentation or protrusion

as described in column 4, lines 1-5 and column 7, lines 22-68 and column 8, lines 1-56.

Regarding claim 9, Yoshitake et al. discloses (see Figures 3-5) that the diffraction effects observed in a particular part of the image are determined by the interstitial element configuration in a corresponding part of the surface relief structure, and the interstitial element configuration features include one or more of the following features:

(a) lengths of interstitial elements;

(b) widths of interstitial elements;

(c) depths and/or heights of interstitial elements;

(d) local spatial frequency of interstitial elements;

(e) degree of curvature of interstitial elements;

(f) shape of interstitial elements; and

(g) shapes of joins between adjacent interstitial elements

as described in column 7, lines 22-68 and column 8, lines 1-15.

Regarding claim 10, Yoshitake et al. discloses that between background elements interstitial elements vary continuously in terms of orientation, curvature, thickness and/or shape, the variations being a means by which image information is encoded into the surface relief structure as described in column 7, lines 22-68 and column 8, lines 1-15.

Regarding claim 11, Yoshitake et al. discloses that at least some of the interstitial elements are oriented generally parallel to the background elements as shown in Figure 5.

Regarding claim 12, Yoshitake et al. discloses (see Figure 3) that at least some of the interstitial elements (14) are arranged in a comb-like configuration, with the teeth of the comb being oriented at right angles or at an angle oblique to the general orientation of the background elements (15) as shown in Figure 3.

Regarding claim 13, Yoshitake et al. discloses (see Figure 3) that at least some of the interstitial elements are arranged in groups oriented at right angles or obliquely to the general orientation of the background elements, such that a cross-section through the group has a periodic or sinusoidal shape of many repeating periods or oscillations as described in column 6, lines 1-63 and column 7, lines 22-58.

Regarding claim 14, Yoshitake et al. discloses that at least some interstitial element configurations are designed to create grey-scale or variable image intensity information in the image, and one or more of the following configuration features give rise to the grey-scale or variable image intensity information:

(a) lengths of interstitial elements;

(b) degree of curvature of interstitial elements;

(c) widths of interstitial elements and shapes of joins between adjacent elements;

(d) local slope or angle of interstitial elements

as described in column 4, lines 11-13, column 7, lines 22-67 and column 8, lines 1-15.

Regarding claim 15, Yoshitake et al. discloses that at least some interstitial element configurations are designed to create colour information in the image as described in column 4, lines 4-10, column 8, lines 10-16, 57-63.

Regarding claim 16, Yoshitake et al. discloses (see Figures 3 and 5) that the background elements include one or more of the following configurations:

(a) straight, equally spaced background elements;

(b) straight, variably spaced background elements;

(c) undulating, equally spaced background elements;

(d) undulating, variably spaced background elements;

(e) equally spaced closed or open elliptically shaped background elements;

(f) variably spaced closed or open elliptically shaped background elements;

(g) zig-zag shaped background elements of variable zig or zag angle as shown in Figures 3 and 5.

Regarding claim 17, Yoshitake et al. discloses that the surface relief structure generates two or more diffraction images which are observable from different ranges of viewing angles, wherein some regions of the surface relief structure contribute to one of the images, and other regions contribute to another of the images as described in column 6, lines 9-63.

Regarding claim 18, Yoshitake et al discloses that at least some of the interstitial elements have lengths of less than 0.25mm as described in column 10, lines 1-15.

Regarding claim 19, Yoshitake et al discloses that the background elements have lengths of greater than 0.25mm as described in column 10, lines 1-15.

Regarding claim 20, Yoshitake et al. discloses that the surface relief structure includes between background elements one or more of the following:
(a) small scale text or graphics indented into or protruding from the surface relief structure; (b) interstitial elements consisting of parallelograms of varying angular orientations indented into the surface relief structure; (c) diffusely reflecting randomly distributed interstitial elements; (d) diffusely reflecting trapezoidal interstitial elements as described in column 4, lines 1-5 and column 8, lines 36-56.

3. Claims 1-3, 8, 9, 11, 14-17, 19 and 21 rejected under 35 U.S.C. 102(b) as being anticipated by Umeda et al. U.S. Patent 5,138,604.

In regard to claim 1, Umeda et al. discloses (see Figures 3 and 6) a diffractive device having a surface relief structure which, when illuminated by a light source, generates one or more diffraction images which are observable from particular ranges of viewing angles around the device as described in column 5, lines 3-22, including: a region (2) of diffractive structural elements, the region having a length and a width as shown in Figures 3 and 6; background diffractive structural elements (5, 5a) distributed over the length of the region, a plurality of the background elements having a longitudinal extent which extends throughout the width of the region as shown in Figures 3 and 6; and interstitial diffractive structural elements (2a, 2b); wherein the interstitial elements are interspersed between the background elements within the region such that the diffractive action of the background elements is to modulated by the interstitial elements, with differing interstitial element configuration in differing parts of the surface relief structure producing differing diffraction effects in corresponding parts

of the diffraction images as described in column 3, lines 14-53, column 4, lines 47-55 and column 5, lines 3-22. It should be noted that the definition of interstitial is "related to or situated in the interstices," an interstice being "a space that intervenes between things," (i.e., situated in a space that intervenes between things). (See Merriam-Webster's Collegiate Dictionary, 10th ed., 1999) Therefore, it is clear that the diffractive structural element meets the claimed recitation of an interstitial diffractive structural element.

Regarding claim 2, Umeda et al. discloses (see Figures 1-6) that at least some of the background elements consist of a multiplicity of continuously connected individual ridge or groove segments, with ridge or groove segments in adjacent background elements being arranged in an approximately parallel configuration, and wherein at least some of the interstitial elements consist of individual or bifurcated ridge or groove segments interspersed between the background elements, with interstitial element ridge or groove segments being approximately parallel to ridge or groove segments in adjacent background elements as shown in Figures 1-6.

Regarding claim 3, Umeda et al. discloses (see Figure 5) that at least some of the background elements are approximately parallel, each consisting of a plurality of discontinuous individual ridge or groove segments, and wherein at least some of the interstitial elements are approximately parallel to each other, each consisting of one or more ridge or groove segments and each being located in a discontinuity in a background element as shown in Figure 5.

Regarding claim 8, Umeda et al. discloses (see Figures 3-6) that each of the background elements and the interstitial elements has a shape which includes one or more of the following features:

(a) a straight, curved or undulating groove;

(b) a straight, curved or undulating ridge;

(c) an array of dot-shaped indentations or protrusions; or

(d) a polygonally shaped indentation or protrusion

as shown in Figures 3-6.

Regarding claim 9, Umeda et al. discloses (see Figures 4, 8, 10-11) that the diffraction effects observed in a particular part of the image are determined by the interstitial element configuration in a corresponding part of the surface relief structure, and the interstitial element configuration features include one or more of the following features:

(a) lengths of interstitial elements;

(b) widths of interstitial elements;

(c) depths and/or heights of interstitial elements;

(d) local spatial frequency of interstitial elements;

(e) degree of curvature of interstitial elements;

(f) shape of interstitial elements; and

(g) shapes of joins between adjacent interstitial elements

as described in column 5, lines 50-68 and column 6, lines 1-15.

Regarding claim 11, Umeda et al. discloses that at least some of the interstitial elements are oriented generally parallel to the background elements as shown in Figures 5 and 6.

Regarding claim 14, Umeda et al. discloses (see Figures 8 and 10) that at least some interstitial element configurations are designed to create grey-scale or variable image intensity information in the image, and one or more of the following configuration features give rise to the grey-scale or variable image intensity information:

(a) lengths of interstitial elements;

(b) degree of curvature of interstitial elements;

(c) widths of interstitial elements and shapes of joins between adjacent elements;

(d) local slope or angle of interstitial elements

as described in column 3, lines 14-53, column 4, lines 47-55 and column 5, lines 3-22.

Regarding claim 15, Umeda et al. discloses that at least some interstitial element configurations are designed to create colour information in the image as described in column 5, lines 3-11.

Regarding claim 16, Umeda et al. discloses (see Figures 5 and 6) that the background elements include one or more of the following configurations:

(a) straight, equally spaced background elements;

(b) straight, variably spaced background elements;

(c) undulating, equally spaced background elements;

(d) undulating, variably spaced background elements;

(e) equally spaced closed or open elliptically shaped background elements;

(f) variably spaced closed or open elliptically shaped background elements;

(g) zig-zag shaped background elements of variable zig or zag angle as shown in Figures 5 and 6.

Regarding claim 17, Umeda et al. discloses that the surface relief structure generates two or more diffraction images which are observable from different ranges of viewing angles, wherein some regions of the surface relief structure contribute to one of the images, and other regions contribute to another of the images as described as described in column 5, lines 3-22.

Regarding claim 19, Umeda et al. discloses that the background elements have lengths of greater than 0.25mm as shown in Figure 5 since the length of the card must certainly be more than 0.25mm.

Regarding claim 21, Umeda et al. discloses that machine-readable digital information is encoded into the positioning, length, orientation and/or other physical characteristics of interstitial elements, such that the information may be read by passing a laser over the interstitial elements and analysing and decoding the reflected light as described in column 4, lines 31-55.

Response to Arguments

4. Applicant's arguments with respect to claims 1-21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alessandro V. Amari whose telephone number is (703) 306-0533. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on (703) 308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ava CVQ
December 5, 2002

MARK A. ROBINSON
PRIMARY EXAMINER